
SMALL-SCALE HYDRO DEVELOPMENT IN MONTANA

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INTRODUCTION

During the past three years, potential developers have filed more than 100 applications to construct small-scale hydropower projects on Montana streams and rivers. The flurry of activity here and in other western states has been described as a "gold rush in falling water," and presents a sharp contrast to the indifference toward small-scale hydro development that marked preceding years.

Much of the interest in hydropower stems from recently enacted federal laws and complementary state statutes which provide significant financial incentives to hydropower developers. In light of an apparent energy shortage, lawmakers promoted small-scale hydro as clean, renewable energy which could help reduce reliance on imported energy sources. Small-scale hydro was also believed to have few environmental drawbacks, in contrast to conventional fossil-fuel or nuclear power plants.

Small-scale hydro projects which generate electricity from existing dams or from watersheds without competing resource values are often environmentally benign; however, many of the Montana sites where hydropower development has been proposed do exhibit major conflicts with other uses. Projects on free-flowing waterways can jeopardize water quality, fish, wildlife, recreation and related economic values. Hydropower development may also conflict with agricultural and other consumptive water rights in certain locations. By downplaying such concerns, policymakers have failed to establish a legal framework to deal effectively with the impacts of small-scale hydro development.

The existing regulatory structure for hydropower development in Montana presents difficulties for both developers and government officials. The developer must negotiate a bureaucratic maze to obtain permits from the various state and federal agencies having jurisdiction over specific aspects of a proposed hydropower project. State records are scattered among the different agencies, with no central repository for information on the status and details of the projects proposed in Montana. Additionally

state agencies incur considerable expense in reviewing permit applications, but have no mechanism for obtaining reimbursement for these costs.

The procedure for licensing hydro projects is the cause of tension between state and federal officials. Although state agencies are responsible for analyzing specific aspects of proposed projects, the state does not have the authority to evaluate a project as a whole and issue a balanced ruling on its merits. Instead, state analysis is only advisory to the Federal Energy Regulatory Commission (FERC), which licenses hydropower projects. This agency has neither the staff nor the expertise to analyze the environmental impacts or technical feasibility of the literally thousands of projects proposed in the western states. As a result, FERC's rulings are unpredictable, and input from Montana resource officials may be of limited effectiveness.

This briefing paper provides a background on small-scale hydro issues in Montana. Permit procedures, environmental impacts, incentives and roadblocks to development, water rights, interagency cooperation, and state-federal relations are the major policy concerns which need to be addressed to ensure that Montanans can reap the potential benefits from small-scale hydropower without incurring the costs of unwise development.

WHAT IS SMALL-SCALE HYDRO

The term "small-scale hydro" has been used to describe projects ranging from simple waterwheel generators on tiny creeks to several-hundred-foot-high dams on large streams or rivers. This wide variation results from federal regulations which base licensing procedures and financial incentives on power generation capacity. Some federal regulations impose a 5 megawatt (MW) maximum for small-scale classification, and this is probably the most widely accepted number. Other statutes, however, use 15 MW and 30MW as the small-scale limit. The federal Public Utilities Regulatory Policies Act (PURPA), the most important law promoting alternative energy development, allows facilities of up to 80 MW to qualify for small power producer benefits.

This variety of definitions means that "small-scale" hydro projects are not necessarily small. A 5 MW project typically requires a dam higher than 50 feet; one proposed 24 MW project in Wyoming calls for a

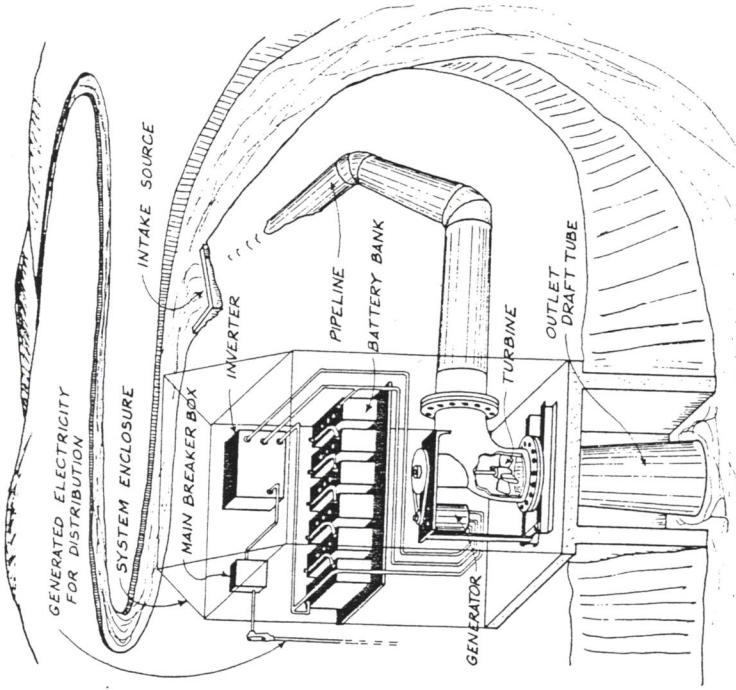
190-foot-high dam. An 80 MW project would approach the size of the proposed Kootenai Falls dam, which would have an average output of about 60 MW and a maximum power rating of 144 MW. At the other end of the spectrum are the so called "microhydro" projects which generate 100 kw (0.1 MW) or less. Thus, under the laws which now govern hydropower development, potential developers of both large and small projects can make use of the available financial incentives which promote small-scale hydro.

Classification of hydroelectric projects by "head" (the vertical distance water falls between a dam or diversion and a powerhouse) and flow (the volume of water passing through the turbines) provides a means to more clearly define the scale of development. High-head, high-flow projects are major dams, such as those developed throughout the Columbia River system; low-head (less than about 60 feet), low-flow projects are typically microhydro projects designed to meet the energy load of an individual home, ranch or shop. Most of the projects currently proposed in Montana and other western states, however, have been either high-head, low-flow or low-head, high-flow, as detailed below.

The high-head, low-flow projects include most of the small stream developments proposed in the mountainous regions of the west. These projects typically employ a diversion dam to channel streamflow into a penstock, the long pipe which conveys water to the turbine. The penstock often extends several thousand feet downslope in order to obtain the greatest head and thus the maximum power output. Water under tremendous pressure exits from the penstock at the powerhouse and drives a turbine connected to a generator. The generator produces electricity, which enters transmission lines.

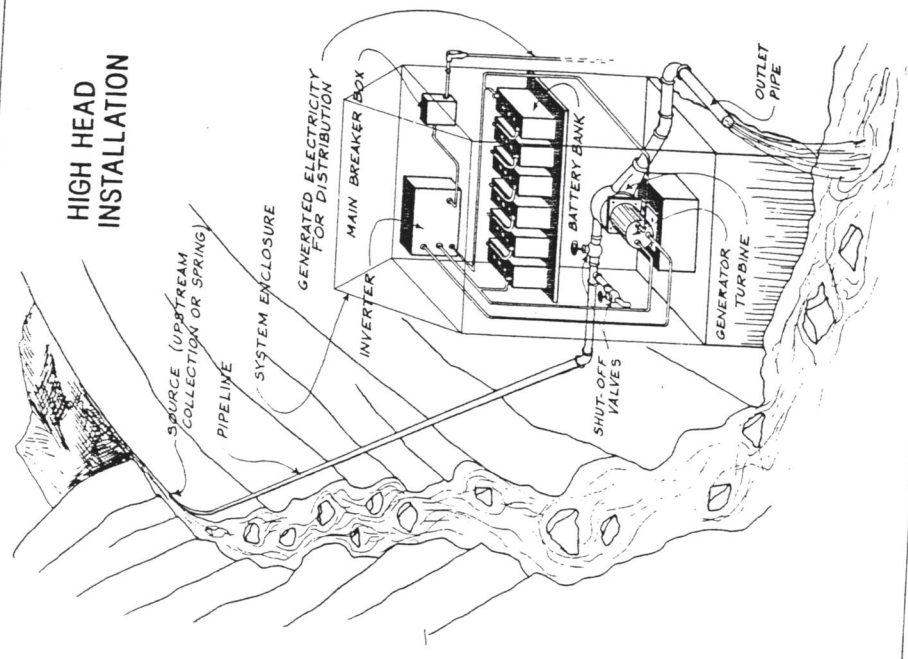
Low-head, high-flow projects are characteristic of valley locations, where rivers provide large quantities of water but gentle topography precludes designs incorporating a sizable vertical drop. Most low-head, high-flow projects under study for development utilize existing dams having large reservoirs and the capability to regulate flow releases. Adding hydroelectric generators for these dams -- termed "retrofitting" -- can in many cases produce significant amounts of power without environmental

LOW HEAD INSTALLATION



Adapted from: Independent Power Developers' brochure "Hydroelectric Power".

HIGH HEAD INSTALLATION



Adapted from: Independent Power Developers' brochure "Hydroelectric Power".

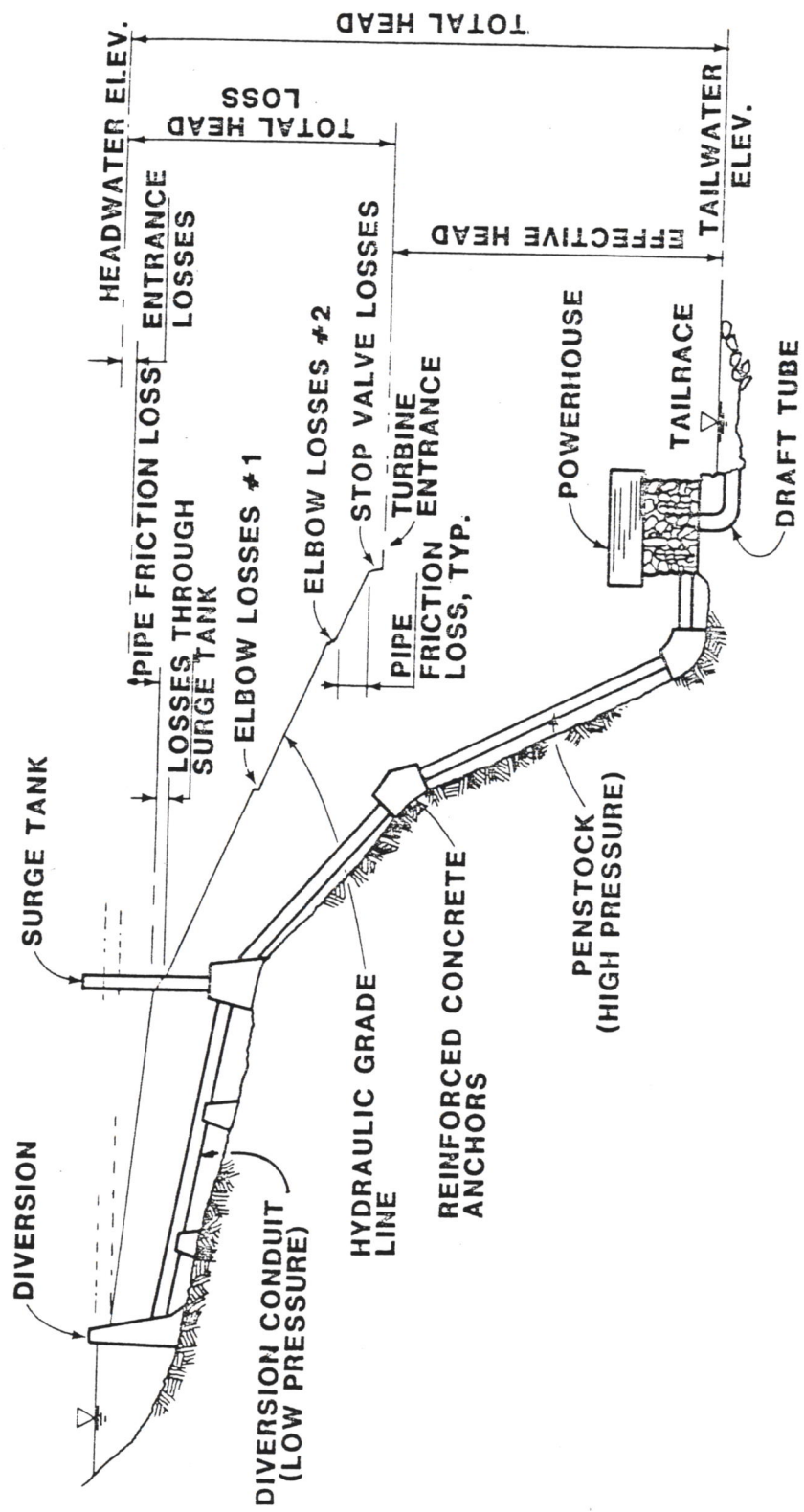


FIGURE VI-1
TYPICAL HIGH
HEAD INSTALLATION



disruption. Low-head projects can also be designed for use on irrigation canals or other man-made water developments.

The emphasis on small stream developments and retrofits results from a number of factors. First, most of the economically attractive sites for major dams have been developed already. Additionally, small projects and retrofits can be developed without the tremendous capital investment required for major dams. This financial consideration is particularly important because most of the potential hydrodevelopers are either small businesses or independent entrepreneurs. Finally, public concern for environmental values can represent a serious obstacle for the development of large dam and reservoir projects.

THE LEGAL FRAMEWORK

The enactment of the Public Utilities Regulatory Policies Act (PURPA) in 1978 signaled a major congressional initiative to promote alternative energy development including hydropower. Sections of this federal law provide financial and tax incentives to small-scale, renewable energy producers and, more importantly, require utility companies to purchase the electricity generated by these producers.

The Federal Energy Regulatory Commission (FERC) administers PURPA. In its rules to implement the act, FERC has established two conditions which greatly benefit small-scale renewable energy producers. First, FERC requires that utility companies purchase power from these producers at "full avoided cost" -- in other words, at a rate equal to the amount the utility company would have to spend to generate additional electricity from conventional sources. Second, FERC requires the utility companies to allow small-scale power producers to interconnect with the electric utility grid. The combined effect of these rules (which were upheld by the U.S. Supreme Court in May, 1983) is to guarantee both a price and a market for energy produced by small-scale producers using renewable energy resources.

The passage of Senate Bill 139 by the 1981 Montana Legislature established a statewide "mini-PURPA" which, like its federal counterpart, guarantees that utility companies will purchase electricity from a qualifying facility. (A qualifying facility under the act is one which (a) produces energy from biomass, water, waste, wind, cogeneration or other

renewable resources, (b) has a capacity not greater than 80 megawatts, and (c) is owned by a person not primarily engaged in electric power sales other than small power production.) The Public Service Commission sets the rates and conditions for the sale of this electricity to the utility companies from the small-scale power producers.

In its recent rulings, the PSC has followed the federal model and used the full-avoided-cost approach in setting the rates at which utility companies must purchase electricity from qualifying facilities. The PSC ordered calculations of avoided costs for Montana Power Company and Pacific Power and Light be based on the cost per kilowatt for electricity from the Colstrip 3 and 4 coal-fired power plants, and avoided costs for Montana-Dakota Utilities be based on the cost of electricity produced by the Antelope Valley System 2 coal-fired power plant. The PSC rejected utility company contentions that the current energy surplus should be considered to reduce the rates the utilities have to pay for electricity generated by small power producers.

The Public Service Commission also agreed to the concept of utility companies setting long-term contract rates for electricity purchases. The establishment of long-term rates is crucial for small power producers to determine the economic feasibility of proposed projects and to obtain financing for construction.

During 1983, the PSC held hearings on the progress of small power production contracts and the methods of computing avoided cost rates. In an order dated November 10, 1983, the Commission found that "major problems" in the implementation of PURPA and Montana's mini-PURPA "have acted as an almost complete barrier to Montana's utilities' purchasing qualifying facility power." The PSC identified the Montana Power Company's failure to offer long-term contracts as the most significant factor stifling small power production in Montana.

To address the need for long-term contracts, the Public Service Commission decided to specify the purchase rates and conditions that must be contained in long-term contracts. The Commission emphasized, however, that its rate schedule is intended to stimulate, not replace, good faith negotiations for purchases of small power production by utilities. The PSC

rates do provide a bottom line if negotiations fail to produce agreement on interconnection details, payment scheduling or other specifics.

In early February, 1984, the Public Service Commission is expected to announce its rate schedule for long-term purchases of energy by utilities from small power producers. Preliminary calculations indicate that the payment schedule will range from about 7 cents per kilowatt-hour for a 35-year contract to about 4 cents per kilowatt-hour for a four-year contract.

Both Montana and federal law offer potential hydropower developers additional financial incentives for development. The federal energy tax credits and accelerated depreciation allowance are cited by developers as major incentives encouraging small-scale hydro projects. Under Montana law, hydro developers have access to tax-exempt, industrial development financing for projects under 50 MW. Additionally, the Alternative Renewable Energy Sources Program administered by the Department of Natural Resources and Conservation can provide grants and loans to hydro projects which exhibit technological advances or meet other established criteria.

The Environmental Quality Council was instrumental in the adoption of state legislation promoting small-scale hydropower development. Through a joint project with the National Conference of State Legislatures, EQC drafted and had introduced the bills which established Montana's mini-PURPA and which provided industrial development financing for small-scale hydro. Additionally, the EQC sponsored a bill to promote hydropower development at state-owned dams. A bill similar to the EQC proposal became law during the 1981 session. This law requires the DNRC to survey its dams for hydropower feasibility and then make the potential hydro sites available for lease. As drafted, the EQC legislation would have made private developers eligible to develop these sites; however, the bill which passed permits the DNRC to accept lease offers only from utilities and electric cooperatives, not from private developers. The law also allows the DNRC to construct and operate its own hydropower projects at these dams if no acceptable lease offers are received.

RECENT SMALL-SCALE HYDRO ACTIVITY IN MONTANA

The surge of interest in small-scale hydro in Montana began in 1981 as potential developers became aware of federal and state incentives for alternative energy development. By the summer of 1982, more than 100 applications for preliminary permits had been filed with the Federal Energy Regulatory Commission on 88 different sites. Most of these applications were submitted to establish priority rights for development and were not based on studies of site characteristics or economic considerations.

Many of the speculative applications have since been withdrawn, while at other sites potential developers are conducting detailed feasibility studies. New applications are still being filed, although the pace has slowed considerably from the initial rush.

As of November, 1983, the Montana Department of Natural Resources and Conservation reported that 73 applications for 70 different small-scale hydro developments remained active under the FERC licensing process. Twenty-six of these proposals were retrofits of existing dams, while 44 proposals were for new dams or diversions.

Despite the many applications, only three small-scale hydro projects have recently been developed in Montana. These include systems on the Philipsburg and Whitefish municipal water supplies and a small development on Cascade Creek in the upper Yellowstone drainage. The remainder of hydro activity has been on paper only, as developers have worked through the permit process, have conducted site-specific studies and, most importantly, have waited for the Montana Public Service Commission to set the long-term rates which utility companies must pay developers for electricity produced by small-scale hydro facilities.

The upcoming announcement by the PSC of long-term contract rates will allow developers to calculate a project's profitability and obtain private financing. The anticipated 35-year rate of about 7 cents per kilowatt is considered very favorable by some potential developers. This rate is reportedly much higher than the rates adopted by the public service commissions in Oregon and Washington, and thus makes Montana an attractive spot for potential developers throughout the Pacific Northwest. According to J. Peter Gross, president of the Montana Small Hydro Association, Montana is going to "break loose" in terms of small-scale hydro development

after the rates are finalized. What has been a paper blizzard may become a storm of on-the-ground activity in the near future.

PERMITS AND LICENSES FOR SMALL-SCALE HYDRO

Under the Federal Power Act, FERC has licensing authority over virtually all nonfederal hydro projects. Most developers initially apply for a FERC preliminary permit, which grants a potential developer exclusive rights to pursue a license for a specific site. The preliminary permit provides 18 to 36 months for the completion of the license application. During this time, the permittee conducts engineering studies to determine project feasibility and must consult with federal, state and local officials on additional permits and environmental assessments.

Municipalities are given preference in case of competing applications for a preliminary permit at a site; however, abuses of the municipality preference (involving cities lending their names to private developers) have led to a review of the preference issue by FERC.

Preference may also be given if a competing applicant can clearly demonstrate a superior project. In all other cases, the date of filing an application establishes a developer's priority to apply for a license at a specific site.

After completing the necessary studies under the preliminary permit, a developer may submit a license application to FERC. The application must include project description and operating plan, water right permit, and environmental impact analysis. Additional information on financing and mitigation measures is required for projects over 5 MW. FERC reviews the completed license application and can issue the license as proposed, can issue a license with specific conditions attached or can deny the license application.

A developer of a project less than 5 MW may apply for an exemption from licensing. The exemption relieves the developer of many of the paperwork requirements of the full licensing process and also shortens the review time by FERC personnel. The exemption process can represent a considerable saving in time and money for a potential hydropower developer.

The Department of Natural Resources and Conservation, the Department of Health and Environmental Sciences, and the Department of Fish, Wildlife

and Parks are the primary state agencies responsible for reviewing proposed hydro projects in Montana. The DNRC processes water right applications and participates in the 310 review of streambank alterations.

The DHES issues short-term authorization for sediment discharge during construction; additionally, for projects not filing as exemptions to FERC licensing, DHES must certify that these projects will not impair water quality. DHES staff review the design specifications of all proposed projects to see whether sediments will pass through naturally or become trapped at diversion structures.

Consultation between developers and the state wildlife agency is a federal requirement under the Fish and Wildlife Coordination Act. For small-scale hydro projects filing for FERC exemptions, the Montana Department of Fish, Wildlife and Parks has the authority to specify absolute conditions that the developer must meet before FERC can grant a license. In most cases, the point of contention revolves around the "bypass" flow (the amount of water that must bypass the diversion and remain instream) to protect fish populations. If no agreement between a developer and FWP can be reached, developers may choose to pursue a full license rather than an exemption. Under this procedure, FERC decides the licensing specifics, including the amount of water that can be diverted. Consultation with the Department of Fish, Wildlife and Parks is still mandatory, but the department's recommendations are not binding.

ENVIRONMENTAL IMPACTS

Adverse environmental impacts of low-head, high-flow hydro projects occur from the impoundment of free-flowing rivers and the flooding of productive bottomlands; however, the low-head projects currently proposed in Montana are retrofits and do not require new dam construction.

The major environmental impacts from retrofits stem from changes in dam operation. Altering flow releases to meet peak power demands can cause drastic water level fluctuations in the river downstream. Fisheries, recreation and irrigation can all be affected. State agencies will have to carefully monitor FERC decisions on retrofits to insure that these existing uses are not compromised.

The high-head projects on tributary streams can effect both aquatic and terrestrial resources. Diversion of water from the natural stream channel into a penstock can result in up to a mile or more of a stream channel having flows below the levels needed to support healthy populations of fish and aquatic insects. Dewatering can also eliminate crucial spawning areas. The diversion structures associated with high-head projects present a barrier to fish movements, a key concern because the trout populations of many lakes and rivers depend on adult fish migrating upstream to spawn in small tributaries and on juvenile fish moving downstream to restock the larger waters. Diversion structures can also jeopardize water quality by acting as sediment traps which would need to be flushed periodically.

Fisheries biologists are also concerned with the cumulative impacts of many small-scale hydro developments in a single drainage. In a BPA-funded study in the Swan drainage, biologists are assessing how development of the 20 proposed small-scale hydro projects would impact the migratory fishery of trophy bull trout. Preliminary analysis indicates that development of many small-scale hydro sites, along with the increased sedimentation from anticipated timber harvest, could significantly reduce bull trout populations in the Swan Lake-Swan River complex.

Adverse impacts to the terrestrial environment from high-head diversion projects relate to erosion and vegetation removal from construction of the diversion structures, penstocks, powerhouses and transmission lines. New access roads to reach hydro facilities in backcountry areas can also affect wildlife habitat, big game movement patterns, and the quality of outdoor recreation.

WATER RIGHTS

Under Montana law, hydropower generation is a beneficial water use. Potential developers apply to the Department of Natural Resources and Conservation to reserve the water required for their project. Upon receipt of the water right application, DNRC field staff evaluate streamflow information, assess existing water rights and conduct a preliminary environmental review. After complying with public notice provisions, the department will in most cases issue a permit, conditioned that the new

water right is valid only if it does not interfere with water rights having a prior appropriation date. Water right permits may not be granted if the application is judged to be a speculative attempt to reserve water, rather than a serious development proposal.

The developer of a potential hydro site is likely to apply for most or all of the available water in order to maximize power generation. At retrofits of existing dams, issuance of a water right permit to use the entire flow release for hydroelectric generation will have a significant effect on potential future consumptive uses upstream. Agricultural operations upstream from the dam would be precluded from expanding irrigation because new water withdrawals would reduce the water reaching the generators and thus would infringe on the hydropower water right. DNRC officials cite Noxon Dam on the lower Clark Fork as an instance where established water rights for hydropower may have "closed down a basin" by effectively stopping any additional consumptive water developments upstream.

Retrofits can also interfere with downstream water rights if flow releases are regulated for power production rather than to meet agricultural needs.

Different water right concerns apply to high-head diversion projects on tributary streams. For these projects located in mountainous areas, there are generally no potential consumptive users upstream because the steep terrain precludes agriculture and other water developments. The concern over small-scale high-head projects relates to instream flows. Through the required fisheries consultation, either FERC (on licenses) or Fish, Wildlife and Parks (on exemptions) has the authority to specify the amount of water that must remain instream, rather than being diverted into the penstock. This "bypass" flow must be inviolate to serve its purpose of protecting fisheries; however, at present there is no tested legal mechanism for guarding this flow against future consumptive withdrawals. The water reservation process is too lengthy and complex to be applied to each tributary affected by hydro development, while under the water right process, it is not clear whether DNRC can issue a permit for instream flows.

High-head projects have negligible effects on water rights downstream because water is returned to the stream below the generators and not consumed. These projects must be carefully sited, however, so that the dewatered stream sections do not include areas where persons have prior rights to withdraw water.

The Department of Natural Resources and Conservation is currently investigating these water rights issues relative to hydro development. Department officials hope to devise methods to assure that hydropower development will be compatible with existing and future water uses, with water availability and with instream flow needs.

ADDITIONAL CONCERNS OF STATE AGENCIES

A primary concern of Montana state agencies is the cost in staff time, salaries and travel expenditures in the review of proposed small-scale hydropower projects. In response to an EQC letter on estimated expenses incurred in small-scale hydropower review during 1983, the departments responded as follows:

DNRC -- \$75,000 (water rights permits, monitoring the status of FERC applications, 310 review)

DFWP -- \$80,000 (on-site inspections, instream flow analysis, consultation and correspondence; does not include \$250,000 in BPA funds for the Swan drainage cumulative impact study)

DHES -- \$ 5,000 (evaluation of hydro design features for water quality effects)

There is currently no mechanism for state agencies to be reimbursed for these costs unless an environmental impact statement is required as part of the water right permit process. In that event, the potential developer would have to fund the EIS.

Funding for environmental review of large hydro projects is a separate and extremely important issue for Montana. Because these projects come under FERC jurisdiction, there are legal questions about the state's ability to require compliance with the Montana Major Facility Siting Act, which regulates all energy developments over 50 MW. If exclusive federal domain is established through court rulings or administrative orders, Montana would be unable to collect fees from potential developers to

conduct the necessary environmental studies. As a result, state concerns over project siting, the need for power, and fish, wildlife and socioeconomic impacts may not be addressed adequately in the federal review process. This point was clear in the federal review of the proposed Kootenai Falls project. The FERC environmental impact statement was generally considered deficient in detail, scope and analysis by state officials.

On the Kootenai Falls project, Northern Lights, Inc., complied with the Major Facility Siting Act and funded Montana's preparation of the environmental impact statement. Information generated through this \$800,000 study gave a much clearer picture of the costs and benefits of the proposed dam than did the FERC environmental impact statement.

To insure adequate environmental review of future large hydro projects, Montana may need to consider a mechanism to require funding of impact studies if the Major Facility Siting Act is found not to apply. This will become an important consideration in future projects, such as the Montana Power Company's proposed 75 MW Carter Ferry Dam on the Missouri River in Chouteau County. MPC has received a FERC preliminary permit for the site, and has given indications that it does not intend to comply with Montana's siting act. The State of Montana, which has filed as an intervenor in the FERC proceedings, may thus find itself without funds to do the necessary studies on the proposed new dam.

State agencies share developers' concerns about coordinating small-scale hydro review. The initial hydro rush in 1981 found agencies working independently without effective lines of communication. This situation has improved considerably in recent years. Meetings on small-scale hydro between DNRC, DFWP and DHES are scheduled at one -or two-month intervals. These meetings allow officials to exchange information on the details of proposed projects, the status of agency reviews and recent contacts with FERC.

Another concern of state agencies is Montana's ability to influence FERC. This federal agency, which deals with Montana issues through offices in Chicago and San Francisco, has neither the staff nor the expertise to properly address state concerns over environmental impacts, water rights or

other considerations. Some states, including Oregon and several New England states, have taken the initiative by declaring certain waters off-limits to hydro development. The effect of such legislation may be more advisory than binding on FERC, as courts have held that the doctrine of federal preemption holds for hydropower licensing. Nevertheless, a state program to identify which potential hydro sites are suitable for development and which should not be developed due to environmental constraints could have an important influence on FERC. On the federal level, proposed legislation would allow states to designate their own selected river systems as being immune from FERC licensing authority.

Montana also has an interest in the integration of small-scale hydro development with the regional energy plan developed by the Northwest Power Planning Council. So far, FERC has not addressed small-scale hydro proposals within the context of the energy plan or its associated fish and wildlife plan. FERC's failure to abide by these plans could reduce the effectiveness of the Power Planning Council's efforts to keep energy supplies in line with demand and to restore fishery and wildlife resources lost due to previous hydropower development in the region.

DEVELOPERS' CONCERNS

Private developers have expressed strong concern over the instream flows required by the Department of Fish, Wildlife and Parks on streams with self-sustaining trout fisheries. Most developers wish to operate year-round and run as much water through their penstocks as possible. Fisheries professionals, however, will only approve a project that meets calculated summer instream flow needs and that will not withdraw any water during the crucial winter period.

Although it is well documented that flows determine a stream's capacity for supporting trout, FWP can not accurately predict fisheries impacts of various hydro withdrawal regimes, especially during winter. Representatives of the small-scale hydro industry have proposed the construction of a test facility to provide this information. Department officials are now considering this option, although research funds would have to be obtained.

Another concern of developers is the Montana statute which allows the Board of Natural Resources and Conservation to lease hydropower development rights at state-owned dams only to public utilities or electric cooperatives. If no acceptable applications are submitted, the law allows DNRC to develop the site, while private developers are excluded from considerations.

Private developers argue that they should be allowed to compete for the right to develop the hydro potential at state-owned dams. They also believe that neither the coops nor the utilities have a strong incentive to develop small hydro power, and that DNRC should be a lessor rather than a developer.

A third concern of developers is the state agency review process. State agencies have no internal policy mandates to accommodate small-scale hydro, and thus staff are said to be indifferent to developers' needs. Coordination between agencies has also been a concern, as developers must approach each agency separately to obtain the various permits. Some developers claim that state personnel have been inconsistent or prejudicial by placing major regulatory burdens on small power producers, while generally trying to accommodate the large utilities. A similar charge is made against the U.S. Forest Service, which has monumental requirements for potential small-scale hydro projects but is considered to have a much less rigorous attitude toward monitoring road construction and timber sales.

VIEWPOINTS ON SMALL-SCALE HYDRO

A number of philosophical differences underlie the conflicting viewpoints of those promoting and those opposing small-scale hydro development. Proponents of small-scale hydro believe its environmental impacts are less damaging than those caused by the mining and burning of coal or the production of nuclear energy and associated nuclear waste. Hydro advocates acknowledge that additional power is not needed now, but they believe hydro facilities built now can eliminate the need for major conventional and nuclear projects in the future. Most hydro developers indicate a desire to construct projects that are compatible with environmental values. Self-sufficiency and the independence from centralized power facilities are also cited as benefits of small-scale

hydro. Small-scale hydro development is seen as an excellent arena for private enterprise to boost individual income and to help local economies in the state. Finally, spokesmen for the budding small-scale hydro industry point out that many recent federal and state policies were adopted specifically to promote alternative, renewable energy and that government should not act as a roadblock to development.

Those concerned about the impacts of small-scale hydro cite the basic incompatibility of diversions and trout streams. The quality of these fisheries is largely controlled by water quantity, and reductions in flows will necessarily decrease fish populations, recreational opportunities and the associated economic benefits to Montana. The magnitude of potential small-scale hydro development in Montana (said to be more than 100 miles of stream), the specter of development in pristine wildlife habitat, and cumulative effects are also major concerns. Opponents to small-scale hydro strongly question the need for the power in view of the regional surplus of energy, and they question the wisdom of a policy which insures that the utility companies and the consumers will pay top rates for this unneeded power. Those concerned about mitigating adverse impacts from small-scale hydro point out that about 20 percent of the cost of the Colstrip plants was for air pollution control, while none of the full-avoided-cost rate guaranteed to hydro developers is earmarked for mitigation. An additional point is raised that FERC misinterpreted federal law by applying PURPA incentives to new dams, rather than only to retrofits as Congress intended. Finally, concerns are expressed about the responsiveness of FERC to state environmental concerns, especially in light of a FERC ruling which classifies dams up to ten-feet-high as "natural water features" for exemption purposes.

EQC ROLE

For a number of reasons, the Environmental Quality Council is an appropriate forum to address some of the unresolved policy questions related to small-scale hydropower development in Montana. First, hydro projects can have significant environmental impacts. Second, hydro assessment is spread among several state agencies, and EQC could play a valuable role in monitoring inter-agency coordination and compliance with

the Montana Environmental Policy Act. Thirdly, EQC has been involved in alternative energy development through its participation in the Renewable Energy Advisory Council. Finally, the Council was instrumental in promoting the legislation which now provides the guaranteed market and the tax incentives for small-scale hydro developers in Montana.

Small-scale hydro appears to be on the verge of rapid development in Montana. A review of key policy issues at this time could help resolve environmental and administrative concerns in advance so that development can proceed in a manner positive to the interests of Montanans and Montana's environment.

SMALL-SCALE HYDRO POLICY QUESTIONS

Small-scale hydropower development presents a number of unresolved administrative and policy questions for Montana officials. By category, these questions include:

Permitting

How can Montana agencies best coordinate their review of proposed small-scale hydropower projects?

How can Montana agencies simplify the permitting process for potential hydropower developers?

Should Montana establish a central office within an existing agency to (a) coordinate agency review of proposed hydro projects, (b) provide a one-stop office for developers, (c) provide a single, official communication channel to FERC, and (d) monitor the status, location and specific features of proposed hydropower developments in the state?

Environmental Impacts

What steps should Montana take to protect critical watersheds from hydropower development?

What are the cumulative environmental impacts of the development of a number of small-scale hydro projects in a single drainage?

How can Montana best evaluate the water quality impacts of small-scale hydro construction and operational design?

How can Montana best direct developers to sites with minimal adverse environmental impacts?

Water Rights

How can Montana insure that hydropower projects in valley locations will not preclude future consumptive water uses upstream from the development?

How can Montana insure the maintenance of adequate instream flows where a hydro development proposes to dewater significant stretches of a river or stream?

How can Montana insure that existing water uses and flow regimes will not be adversely affected if dams are retrofitted with hydroelectric generating facilities?

State Agency Expenditures

Should state agencies be reimbursed for expenses incurred in evaluating and monitoring small-scale hydropower developments?

How can state agencies be funded to do necessary environmental studies for large-scale hydropower developments which come under the jurisdiction of FERC?

Energy Planning and Marketing

Should Montana law encourage the construction of small-scale hydropower projects during a period of surplus electricity?

How will the mandatory purchase of hydroelectric energy by the utility companies affect consumer electricity rates?

Should the "full avoided cost" pricing of hydroelectric energy carry with it any obligation by the developer to mitigate environmental impacts?

How can Montana insure that FERC decisions will be consistent with the Northwest Power Plan?

State-Federal Authority

How can Montana most effectively influence the hydropower licensing decisions of the Federal Energy Regulatory Commission?

Should Montana seek changes in federal laws to establish state control over hydropower development?

Does the Montana Major Facility Siting Act apply to federally licensed hydropower developments which exceed 50 MW or is federal jurisdiction preeminent?